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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/576,727	05/23/2000	Chad A. Cobbley	3639.1US (97-1383.1)	3108

7590 05/17/2005

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EXAMINER

TRINH, MINH N

ART UNIT

PAPER NUMBER

3729

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/576,727

Applicant(s)

COBBLEY ET AL.

Examiner

Minh Trinh

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**– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –
Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 6, 8-20, 22, 23 and 25-34 is/are pending in the application.
- 4a) Of the above claim(s) 9-17 and 26-34 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 8, 18-20, 22, 23 and 25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Receipt is acknowledged of the "conditional" request for RCE application filed on 3/07/05 is acceptable and a RCE has been established. An action on the RCE follows
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1-3, 5,6, 8, 18-20 and 22, 23 and 25 are being objected to because the claims are directed to "an assembly system" instead of "an assembly" as recited in the preamble of the rejected claims.

It is suggested that "An assembly" (independent claims 1 and 18, line 1) should have been changed to: --An assembly system--.

Further, "the assembly " (dependent claims 2-3, 5, 6,8 and 19-20, 22, 23 and 25) should have been changed to: -- The assembly system--, as to which the claims are directed to as so to provide a better understanding and clarification of the invention. Appropriate correction is required.

4. Claims 1-3, 5, 6, 8,18-20 and 22, 23 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The following are examples:

It appears that claims 1-3, 5, 6, 8,18-20, 22, 23 and 25 (as amended) directed to an assembly system instead of "an assembly". Knowing that the body of the claims

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clearly directed to a number of devices as to form "an assembly system" for assembling PCB, therefore it is suggested the preamble of the claims should have been revised to read on: -- An assembly system--, (see also paragraph 3 above).

5. Claims 1-3, 6, 8, 18-20, 23 and 25, as best understood are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakemi et al (US 5,655,704) in view of Yeh et al (US 5,607,099).

Sakemi et al disclose an apparatus for placing a plurality of conductive spheres on a substrate comprising: a stencil plate 4 with upper and lower surfaces and a first pattern of plurality of through holes 4a, said stencil plate configured to place a plurality of conductive spheres 3 in said first pattern on a approximate surface of the substrate 2(see Figs. 3-4); a hopper (container 12) extending across at least a portion of the upper surface of said stencil plate 4 and closely spaced (gap between 12 and surface of 4) therefrom to maintain control over all the spheres therein (see Fig. 4, col. 4, lines 28-36) the hopper 12 having a bottom opening with a dimension extending across the first pattern for dispersing said spheres into the through holes 4a of the stencil plate 4 and a position apparatus 8 (see Fig. 1) for moving the hopper 12 over the first pattern relative to the stencil plate 4 (see Fig. 4) for place said spheres into said through holes 4a onto the proximate surface of said substrate 2 (see Fig. 4). Sakemi et al do not teach the substrate having an upper surface and bearing conductive sites comprising one of recesses sites and level sites with respect to said upper surface thereof. Yeh et al teach the substrate¹⁰ having an upper surface (top surface) and bearing conductive sites

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comprising one of recesses sites 12 including level sites with respect to said upper surface (see illustration of Figs. 2-3, at col. 4, lines 30-49, and at col. 5, lines 4-10).

Therefore, It would have been obvious to one ordinary having skill in the art at the time the invention was made to employ the Yeh et al's teaching of the substrate having an upper surface and bearing conductive sites including recesses sites and level sites with respect to its upper surface as described in details above on to the Sakemi et al invention in order to facilitate the fabrication process including delivering and positioning and that as mention above.

Furthermore, it is old and well known in the art as to provide a substrate that having an upper surface and bearing conductive sites comprising one of recesses sites including level sites with respect to said upper surface, since it has been held to be within the general skill of a worker in the art to select a known substrate from a host of available substrates on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

As applied to claims 2-3 and 6, Sakemi et al teach the spheres being dropped and passed downwardly through the through holes by gravitation force as recited in claim 2 (see Fig. 4 which shows the solder balls being gravity fed into the mounting pads of the substrate 2); and the limitations of claims 3 and 6 (refer to Fig. 4 and the discussion at col. col. 4, lines 28-36).

As applied to claim 8, Sakemi et al teach the stencil 4 is being placed apart from the substrate 2 (see illustration of Fig. 4).

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As applied to claims 19-20 and 23, Sakemi et al teach the spheres being dropped and passed downwardly through the through holes by gravitation force as recited in claim 19 (see Fig. 4 which shows the solder balls being gravity feed into the mounting pads of the substrate 2); and the limitations of claims 20 and 23 (see Fig. 4, and the discussion at col. 4, lines 28-36).

As applied to claim 25, Sakemi et al teach the stencil 4 being placed apart from the substrate 2 (see illustration of Fig. 4).

6. Claims 5 and 22 as best understood are rejected under 35 U.S.C. 103(a) as obvious over Sakemi et al in view of Yeh et al.

As applied to claims 5 and 22, Sakemi et al or Yeh et al as modified and relied upon above do not teach the first pattern holes diameter is greater than the diameter of each of the spheres by up to 1mm. With respect to the above configurations, it would have been an obvious matter of design choice to choose pattern holes diameter greater than the diameter of the spheres, since applicant has not disclosed that the exact size configurations as described above is critical which would solve any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the with the size configurations as disclosed by each of the prior art references (i.e., see Fig. 4 of Sakemi et al, which shows the pattern holes 4a being greater than the diameter of the spheres 3, etc).

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Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Trinh whose telephone number is (571) 272-4569. The examiner can normally be reached on Monday -Thursday 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on (571) 272-4690. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mt



Minh Trinh 5/12/05
Primary Examiner